

## REQUIRED TOPIC 3: SIGNS & SYMPTOMS OF HIGH AND LOW BLOOD SUGAR (HYPERGLYCEMIA AND HYPOGLYCEMIA)

### STATEMENT OF THE PROBLEM

Being able to recognize when blood glucose is too low or too high and treating it appropriately is an important part of managing diabetes and preventing complications.

### KEY MESSAGES

1. Symptoms of high and low blood sugar can be very similar and tend to vary from person to person.
2. Checking your blood sugar level is the only way to know if your blood sugar is high or low.
3. Treat low blood sugar symptoms immediately as blood sugar can continue to drop and result in confusion, coma and in some cases death. When in doubt treat symptoms as if they were due to low blood sugar. Frequent low blood sugars should be discussed with your health care provider.
4. Blood sugars that are higher than what is normal for you should be treated as well. Persistent hyperglycemia should be discussed with your health care provider.

### BACKGROUND

Hypoglycemia means that the blood sugar is too low, usually less than 70 mg/dl. Some people may start to have symptoms of hypoglycemia when their blood glucose levels are higher than 70 mg/dl. This can happen when your blood glucose levels are very high and start to go down quickly. It is important to talk to your health care provider about your individual blood glucose targets, and what level is too low for you.

Hypoglycemia usually occurs in a person who is taking medications for diabetes. It does not typically occur in someone whose diabetes is controlled by diet and exercise alone. Hypoglycemia is caused by anything that lowers blood sugar to levels that are below normal, such as too much exercise, too little food or too much diabetes medication.

### LOW BLOOD SUGAR (HYPOGLYCEMIA)

#### WHAT ARE THE SYMPTOMS OF HYPOGLYCEMIA?

If you have low blood sugar, you may feel:

- Sweaty
- Nervous or anxious
- Weak or overly fatigued
- Fast heartbeat
- Lightheaded or dizzy
- Numb or tingly around your nose or mouth
- Irritable or impatient

- Headache
- Confused
- Hungry

These symptoms are important clues that you have low blood glucose. But each person's reaction to hypoglycemia is different, so it's important that you learn your own signs and symptoms when your blood glucose is low.

The only sure way to know whether you are experiencing hypoglycemia is to check your blood glucose, if possible. If you are experiencing symptoms and you are unable to check your blood glucose for any reason, treat the symptoms as hypoglycemia. Severe hypoglycemia has the potential to cause accidents, injuries, coma, and death.

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### TREATING HYPOGLYCEMIA:

If you are having any of the typical symptoms of hypoglycemia, check your blood sugar if you can. If your blood sugar is low (less than 70 mg/dl or what is low for you), take the following actions:

- Eat or drink about 15-20 grams of glucose or simple carbohydrates (see the list below for examples).
- 15-20 grams of simple carbohydrates can be found in:
  - Glucose tablets (follow package instructions for how many equal this amount)
  - 2 tablespoons of raisins
  - 4 ounces (1/2 cup) of juice or regular soda (not diet)
  - 1 tablespoon sugar, honey, or corn syrup
  - 8 ounces of nonfat or 1% milk
  - Hard candies, jellybeans, or gumdrops (see package to determine how many to consume)
- Wait about 15 minutes and re-check your blood sugar.
- If your blood sugar is still too low, eat another portion of 15-20 grams of carbohydrate
- Once blood glucose returns to normal, eat a small snack if your next planned meal or snack is more than an hour or two away.

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### HYPOGLYCEMIA UNAWARENESS

Symptoms of low blood sugar usually occur when blood sugar levels fall below 70 mg/dl. But, some people have blood glucose readings below this level and do not feel any symptoms. This is called **hypoglycemia unawareness**. People with hypoglycemia unawareness are also less likely to be awakened from sleep when hypoglycemia occurs at night. Hypoglycemia unawareness often occurs to people who have frequent very low blood sugar episodes, have had diabetes for a long time, or tightly control their blood sugar levels. It is important to talk to your health care provider if you think you have this problem as they can help you set reasonable blood sugar goals that will help you avoid lows.

### HIGH BLOOD SUGAR (HYPERGLYCEMIA)

Hyperglycemia means high blood sugar. Hyperglycemia occurs when the body has too little insulin or insulin is not working properly. High blood sugars may also occur due to too little medication, too much food, or an illness or infection. Any value higher than the target ranges (more than 120 mg/dl fasting or more than 180 mg/dl two hours after a meal) is considered high.

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## WHAT ARE THE SYMPTOMS OF HYPERGLYCEMIA?

Sometimes people notice symptoms only when their blood sugar is very high, others notice symptoms if their blood sugar is up just a bit. Some symptoms are:

- High blood sugar
- Frequent urination
- Increased thirst
- Fatigue or weakness

If blood sugar readings are high for a few days, you may also feel hungry or dizzy when you stand up. Other people may notice you are getting confused. This is an emergency situation and you should go to the hospital or call 911 right away.

An illness or an infection may cause higher or lower than normal blood sugars. When you are not feeling well, it is important to check your blood sugar more often. If you are vomiting or have diarrhea, or are not able to eat regularly, call your doctor to find out if you need to change the way you take your diabetes medications.

You should contact your doctor/clinic if you have two or more high blood sugar readings in a week or persistently elevated blood sugar levels.

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## HOW TO AVOID HYPERGLYCEMIA

Always check your blood sugar before assuming that your blood sugar is too high. You can lower your blood sugar by exercising if it is not too high. If your blood sugar is higher than 250 mg/dl you should not exercise until it is lower. Getting regular exercise on most days will help your body use glucose better and also allow insulin to work better.

Cutting down on the amount of food you eat will help as well, although you never should skip meals. Ask your health care provider to refer you to a registered dietitian to help you create a meal plan that works for you.

If exercise and changes in your diet don't work, your doctor may change the amount of your medication or insulin or possibly the timing of when you take it.

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## PATIENT OUTCOMES/GOALS

By the end of the educational session, the client with diabetes will be able to:

- State one cause of hypoglycemia (high blood sugar)
- State two symptoms they have either experienced or know to be associated with hypoglycemia
- State one appropriate treatment for hypoglycemia
- State one cause of hyperglycemia
- State one appropriate treatment for hyperglycemia
- State when to seek medical care for hyperglycemia

CHW ACTIONS	PARTICIPANT ACTIONS
<ul style="list-style-type: none"> <li>• Ask the participant for one cause of hypoglycemia.</li> <li>• Ask for two symptoms that are associated with hypoglycemia.</li> <li>• Ask for one treatment for hypoglycemia.</li> <li>• Ask for one cause of hyperglycemia.</li> <li>• Ask for one treatment for hyperglycemia and when medical care should be obtained.</li> <li>• Help the participant create a plan for preventing and managing hypo- and hyperglycemia.</li> </ul>	<ul style="list-style-type: none"> <li>• Correctly identify symptoms of hypoglycemia and hyperglycemia and treatment of both conditions.</li> <li>• Identify a plan for dealing with hypo &amp; hyperglycemia if either should occur. The plan can include: <ul style="list-style-type: none"> <li>○ A low blood sugar kit for the car, bedside, or to carry with them.</li> <li>○ A diabetes identification card/bracelet.</li> <li>○ Teaching a family member/friend the symptoms of low blood sugar and how to treat it.</li> <li>○ Recording high and low blood glucose readings along with possible causes.</li> </ul> </li> </ul>

## TOOLS/TEACHING AIDS

### AIDES:

- None

## HANDOUTS

1. **Topic 3 Coversheet**.....[English](#) | [Spanish](#)
2. **Common Signs of High Blood Sugar**.....[English](#) | [Spanish](#)  
Source: [Learning About Diabetes, Inc.](#) 2006
3. **Common Signs of Low Blood Sugar** .....[English](#) | [Spanish](#)  
Source: [Learning About Diabetes, Inc.](#) 2006
4. **Take Care of Yourself on Sick Days** .....[English](#) | [Spanish](#)  
Source: [Public Health – Seattle & King County](#)
5. **Hypoglycemia = Low Blood Sugar** .....[English](#) | [Spanish](#)  
Source: Adapted from Black Creek Community Health Centre with information from the Canadian Diabetes Association's "[Patient Education Resource Kit \(PERK\)—Hypoglycemia=Low blood sugar](#)" 2009.
6. **Action Plan**.....[English](#) | [Spanish](#)  
Source: [Public Health – Seattle & King County](#)

Version	Date	Description	Staff	Final
V.1.	12/23/2011	Original	KA/ JK	Yes
V.2.	08/01/2013	Revised	JK	Yes
V.2.1	07/24/2014	Updated Formatting	ND	Yes